

ANIMAL EXPOSURE SURVEILLANCE PROGRAM

Medical Support for Workers with Animal Contact

I. Purpose

The purpose of the Animal Exposure Surveillance Program (AESP) is to provide:

1. relevant health and safety information related to use and care of animals;
2. occupationally indicated immunizations; and
3. clinical evaluation and treatment for individuals with animal related injuries or illnesses.

II. Relevant OMS Procedure Manual Sections

- A. Pre-placement Medical Evaluation. Chapter III, Section 2.
- B. Injuries Involving Nonhuman Primates (B Virus). Chapter III, Section 8.
- C. Wound Care Guidelines. Chapter III, Section 9.
- D. Occupational Allergy Clinic. Chapter III, Section 12.
- E. Rabies Immunization. Chapter III, Section 21.
- F. Tetanus-diphtheria Immunization. Chapter III, Section 23.
- G. Serum Storage Program. Chapter III, Section 29.
- H. Laboratory Animal Allergies. Chapter III, Section 33.
- I. Retrovirus Exposure Surveillance Program (RESP). Chapter IV, Section 8.
- J. Tuberculosis Surveillance Program. Chapter IV, Section 9.
- K. Viral Hepatitis Surveillance Program. Chapter IV, Section 10.

III. Attachments

- A. Medical Evaluation Form - Attachment I
- B. Surveillance Recall Memo - Attachment II
- C. Surveillance Recall Memo, Second Notice - Attachment III
- D. Non-compliance Memo - Attachment IV

IV. Eligibility

- A. Federal employees at the NIH are required to participate in this program if they:
 1. are involved in the direct care of animals or the animals' living quarters;
or
 2. have direct contact with animals (live or dead), their viable tissues, body fluids, or waste.
- B. The minimum features of this program that an employee must receive to be certified as participating are listed in Section XII.
- C. Contract employees, or employees of non-federal organizations, are eligible only for emergency medical care (i.e. evaluation and treatment of occupational injuries.)

V. Identification and Enrollment

- A. Supervisors identify potential workplace health hazards including contact with research animals as part of the pre-placement medical evaluation process. Eligible employees (see IV.A.) are enrolled during the pre-placement medical evaluation.
 1. Supervisors may request a review of a position applicant's preexisting OMS clinical record to determine whether the worker has already received the services required for enrollment in the AESP (see Section XII below).
- B. OMS enrolls eligible employees if they report an occupational injury or illness involving a research animal and they are not already enrolled.
- C. At the completion of the enrollment, the employee is given two copies of the Medical Evaluation Form (Attachment I) documenting that the enrollment process has been completed. One copy is for the employee's records and the second is intended for the supervisor. It is the employee's responsibility to return the form to the supervisor. OMS forwards a third copy of the form to the Institute or Center (IC) Animal Program Director (APD) and retains a fourth copy of the form in the employee's clinical record.
- D. If the enrollment occurs as a result of a review of the employee's OMS clinical record, the Medical Evaluation Form is mailed to the employee with copies of relevant educational materials.

VI. Program Organization

The surveillance program is subdivided into four broad categories:

1. Small animal - i.e. fish, amphibians, birds, rodents, rabbits (see Section VII and XI)
2. Large animal - i.e. cats, dogs, livestock (see Sections VII, VIII, and XI)
3. Nonhuman primate - marmosets, monkeys, apes (see Sections VII, IX, and XI)
4. Nonhuman primate tissues (see Sections VII, X, and XI)

VII. Services offered to all AESP participants

- A. A pre-placement medical evaluation that includes an occupational medical history, safety and health counseling, tuberculin skin testing, appropriate immunizations, and enrollment in other applicable medical surveillance programs. A physical exam is almost never necessary.
 1. The occupational medical history includes a review of:
 - a. the functional demands and environmental factors associated with the proposed position;
 - b. the type of animal (s) contacted;
 - c. other potential work-site health hazards; and
 - d. the individual's medical history.
 2. The participant is counseled regarding:
 - a. the value of Universal Precautions,

- b. the availability of medical evaluation and treatment in OMS for occupational injuries and illnesses, including allergies (see Section VII-C below), and
 - c. the participant is provided information and handouts regarding allergic reactions to laboratory animals and relevant zoonoses based upon the animals used at the worksite (see the OMS Laboratory Animal Allergies procedure).
 - 3. A tuberculin skin test (PPD) is administered if there is no history of a prior positive test.
 - 4. A chest radiograph is also required if the participant:
 - a. offers a history of a prior positive test and cannot provide documentation of a normal chest radiograph two years or more following the discovery of the positive tuberculin skin test; or
 - b. is discovered to have a positive tuberculin test reactor. See the OMS Tuberculosis Surveillance Program for additional details.
 - 5. The participant is given a booster dose of tetanus and diphtheria (Td) toxoids if ten or more years have lapsed since the worker's last Td booster dose.
- B. Serum storage - AESP participants may elect to donate 6 ml. of blood so that the serum may be stored at -20(C for their future reference. Reference the OMS Serum Storage Program for additional details.
- C. Medical evaluation for treatment of work related injuries and illnesses - employees are required to promptly report all work related injuries and illnesses to OMS.
 - 1. Injuries
 - a. Wound evaluation and treatment are performed in accordance with the OMS Wound Care Guidelines.
 - b. Injuries involving body fluids from nonhuman primates are addressed in Section IX C-F and in the OMS guidelines for evaluating and treating injuries involving nonhuman primates.
 - c. When the injury involves either a percutaneous or mucous membrane exposure to animal blood or other body fluid, 6 ml. of blood is obtained from the injured worker. The serum from this blood sample is stored for possible future reference.
 - 2. Illnesses - infections
 - a. Many of the agents responsible for infections in laboratory animals are capable of infecting humans. Several infectious agents are covered in this surveillance protocol, but many are not.
 - b. Employees are counseled by the OMS practitioner during the enrollment evaluation to report gastrointestinal, respiratory, or dermal illness with signs or symptoms that resemble those occurring in the animals for which they care.
 - 3. Illnesses-allergies
 - a. Employees at risk for developing work related allergies include those with a history of pre-existing allergies (especially to

- household pets), asthma, seasonal rhinitis, or eczema.
- b. During the preplacement medical evaluation, workers are counseled and provided a handout that describes: the risk for developing allergic reactions to laboratory animal proteins; how to avoid exposure to potential allergens; the physical signs and symptoms suggestive of an allergic reaction; and that they should promptly report related concerns to OMS for evaluation. See the OMS Laboratory Animal Allergy procedure and Occupational Allergy Clinic procedures for additional information.

VIII. A participant with large animal contact may receive the following services in addition to those listed in Section VII.

A. Rabies immunization

1. Rabies immunization is provided to employees who:
 - a. work with the rabies virus;
 - b. have direct contact with quarantined animals potentially infected with rabies;
 - c. work with potentially infected animal body organs or perform post mortem examinations on selected animals with a history of poorly defined neurological disorders;
 - d. capture or destroy wild animals on campus; or
 - e. inspect facilities where the rabies virus is used.
2. Immunization is performed as outlined in the Rabies Immunization section of the OMS procedure manual.

B. Serologic testing for toxoplasmosis

1. A toxoplasmosis antibody titer is obtained for immunosuppressed workers and any female employee of childbearing capacity who anticipates occupational exposure to cats or their feces. A titer of greater than, or equal to, 1:16 by immunofluorescent testing is interpreted as protective.
2. Immunocompromised individuals and any female of childbearing capacity who lacks immunity to toxoplasmosis and plans to work with cats is informed of her susceptibility and is provided additional educational information.
3. The supervisor is advised to arrange a job reassignment for immunosuppressed workers and for susceptible employees for the duration of the pregnancy. When this is not possible, consultation with an Occupational Safety and Health Branch safety consultant is requested to identify other mechanisms to protect the employee.

C. Q Fever counseling and treatment

1. Employees at risk of exposure to Q fever include those who:
 - a. have direct involvement with the organism *Coxiella burnetii* in a research capacity, or
 - b. handle or use products of parturition or material contaminated by them (i.e., placenta, amniotic fluid, blood or bedding) from sheep,

goats, cattle, or cats.

2. At the time of the pre placement medical evaluation, the participant is evaluated for his/her likelihood of developing chronic sequelae should they acquire Q fever. Employees with valvular or congenital heart defects and those who are immunosuppressed are advised of the potential risks involved, and medical clearance for duty will be determined by an OMS physician on a case-by-case basis.
3. Characteristics of infection with *Coxiella burnetii*
 - a. The incubation period averages 20 days, with a range from 14-39 days.
 - b. Signs and symptoms of acute infection include the sudden onset of severe headache, spiking fever to 104(F or greater, chills, and myalgia. The patient may present with pneumonitis or clinical hepatitis.
 - c. Treatment is initiated as soon as diagnosis is suspected.
 - d. Serologic confirmation of the diagnosis is accomplished three months later using enzyme immunoassay (EIA) testing of serum samples obtained at the time of initial report, at two weeks, and every 30 days from that day for three months.
 - e. The employee's work status depends upon the severity of symptoms. Human to human transmission of Q fever has not been documented.

IX. Participants working with or caring for nonhuman primates and those workers performing necropsies on nonhuman primates are offered the following services in addition to those listed in Section VII.

A. Tuberculosis screening

1. Tuberculosis is a zoonotic disease that is difficult to detect in nonhuman primates and spreads rapidly in nonhuman primate colonies. Because there is no effective treatment for this infection in nonhuman primates, infected animals are euthanized to control the spread of the infection. Due to the devastating consequences of tuberculosis for nonhuman primates and associated research projects, special precautions are taken to reduce the risk that workers involved in the use and care of these animals will infect them with *M. tuberculosis*.
2. If the participant has a history of a previous positive reaction to a tuberculin skin test, further skin testing is not performed.
 - a. A Tuberculosis (TB) Quiz and Health Survey (see OMS Tuberculosis Program) are administered and the completed form is filed in the employee's OMS medical record.
 - b. A chest radiograph is obtained if the employee's responses to the quiz suggest active pulmonary tuberculosis or the employee cannot provide documentation of a normal chest radiograph within two years of the discovery of the positive reaction.
 - c. A chest radiograph is obtained if the participant received

inappropriate chemoprophylaxis or treatment.

3. Participants working with nonhuman primates who do not have a history of a prior positive reaction to a tuberculin skin test receive one tuberculin skin test on enrollment. A second skin test is strongly advised and administered one to two weeks after the initial test.
 - a. If the first tuberculin skin test is positive, a medical history is obtained for symptoms suggestive of active pulmonary tuberculosis and a chest radiograph is obtained.
 - i. If the individual did not have a documented negative skin test in the preceding 24 months (i.e., the test result does not represent a tuberculin skin test conversion), and there is neither clinical nor radiographic evidence of active pulmonary tuberculosis, the employee is counseled, referred for further care as indicated, and medically cleared for duty.
 - ii. If the employee had a documented negative skin test in the preceding 24 months and there is no radiographic evidence of active pulmonary disease, the employee is medically restricted from contact with live nonhuman primates until appropriate medical treatment has been received for at least three days. If the employee is unable to obtain prophylaxis from his/her personal health care provider, OMS may offer prophylaxis.
 - iii. If there is clinical or radiographic evidence of active pulmonary tuberculosis, the employee is medically restricted from returning to work. This restriction is not removed until the individual provides documentation establishing that the clinical or radiographic findings can reasonably be attributed to a condition other than active pulmonary tuberculosis. The worker is not cleared to return to the work place until the OMS medical director is reasonably convinced that the individual does not represent a health risk to others. Continued compliance with treatment is monitored by OMS.
 - iv. If the medical recommendation is that the employee not work or not work with live nonhuman primates, or not return to work, the employee, his/her supervisor, and the Animal Program Director for the IC are notified the day the decision is made.
 - b. If the initial tuberculin skin test is negative and the second test is positive, the response is indicative of a prior infection (booster phenomenon) and the course of action is as described in Section IX.A.3.a. (1).
 - c. If both of the tuberculin skin tests are negative, and there are no other medical contraindications, the employee is medically cleared for work.

4. Evaluation of persons sustaining a potential work place exposure to M. tuberculosis is conducted as described in the OMS Tuberculosis Surveillance Program.

B. Rubeola (measles) screening

1. Rubeola is one of the most frequently reported viral diseases of nonhuman primates.
2. Due to the potential personal and public health consequences associated with rubeola infection, all employees working in rooms containing nonhuman primates must have laboratory evidence of protection to rubeola.

C. Retrovirus testing

1. Human immunodeficiency virus (HIV-1) and human T-cell lymphotropic virus (HTLV I/II)

Employees who work with either HIV-1 or HTLV I/II or animals used in research involving these viruses are offered enrollment in the OMS Retrovirus Exposure Surveillance Program (RESP). RESP participants are provided regular serologic testing for retroviruses present in their work areas and for which there is a commercially available laboratory diagnostic test.

2. Simian immunodeficiency virus (SIV)

- a. SIV is genetically and antigenically related to HIV-2. SIV infections occur naturally in African Green monkeys, baboons, sooty mangabeys, and chimpanzees. The infection commonly persists without any clinical manifestations. Several species of the genus *Macaca* (i.e. rhesus, cynomolgus) are highly susceptible and die following experimental or colony acquired SIV infection.
- b. Testing at the CDC has shown that three of 472 individuals (0.6%) with nonhuman primate contact have antibodies to SIV. These occupationally acquired infections were discovered in 1992 and 1994. PCR testing was transiently positive for one of the workers; however, the virus could not be cultured in any of these cases. To date, each of these workers is asymptomatic and has no demonstrable immune deficiency.
- c. Routine serologic testing for SIV/HIV-2 is offered through the RESP for participants using or caring for nonhuman primates that are or may be infected with SIV/HIV-2.

3. Simian type D retroviruses (SRVs)

- a. SRVs are a group of closely related viruses that are enzootic in many captive populations of macaques (e.g., rhesus, cynomolgus, squirrel, pig-tailed, bonnet, and langur monkeys). SRV has been identified as the etiologic agent of an infectious immunodeficiency disease in macaques that resembles infections with HIV-1 in humans.
- b. The CDC has reported that two of 398 individuals (0.5%) with occupational contact with nonhuman primates had seroreactivity

to SRV antigens. The investigators were unable to detect SRV-infected cells by PCR testing or to culture the virus. Neither worker has symptoms suggestive of an infection with a retrovirus.

- c. Because there is no commercially available diagnostic test for SRV, OMS does not provide routine testing for SRV.
- 4. Simian foamy virus (SFV)
 - a. SFV has been detected in most nonhuman primate populations. However, nonhuman primates infected with SFV have no clinical evidence of the infection
 - b. The CDC has discovered serologic evidence of SFV infection in 13 of 398 individuals (3.3%) who worked with nonhuman primates. PCR testing was positive from several of these workers and the virus was cultured from two individuals. None of those infected has clinical evidence of their infection.
 - c. Because there is no commercially available diagnostic test for SFV, OMS does not provide routine testing for SFV.
- 5. OMS provides post-exposure testing, not restricted to commercially available diagnostic tests, for documented exposures to primate retroviruses. OMS also provides chemoprophylaxis when clinically indicated for exposures to primate retroviruses. Additional details are contained in the RESP.
- D. Rabies immunization is offered to employees working with nonhuman primates in quarantine (see Section VIII A).
- E. B-virus (cercopithecine herpesvirus 1) testing
 - 1. Injuries involving neurologic tissues or either ocular or oral secretions of rhesus, cynomolgus and other macaque monkeys (i.e. pig-tail and stump-tail monkeys) very rarely result in human infection with B-virus. However, due to the extreme morbidity and mortality of this infection in humans, special effort is taken to ensure prompt medical evaluation and first aid following a potential exposure to B-virus.
 - 2. The OMS procedure for Injuries Involving Nonhuman Primates (B virus) describes the: relevant medical history needed, first aid provided, diagnostic studies performed, and the advice given to the injured worker.

X. Participants who work with nonhuman primate tissues may receive the following services in addition to those listed in Section VII.

- A. Periodic tuberculin skin testing is encouraged for participants working with non-fixed lung or lymph node tissue as described in Section IX.A.
- B. A single tuberculin skin test is offered to participants working with all other nonhuman primate tissue.
 - 1. If the tuberculin skin test is negative and there are no other medical contraindications, the employee is medically cleared for work, and there is no follow-up.
 - 2. If the tuberculin skin test is positive, the course of action is as described

in Section IX.A.3.a.(1) and (3).

XI. Surveillance Recall

- A. Participants working with small and large animals are advised at the time of enrollment to return for Td boosting ten years from the date of their last booster dose.
- B. Participants working with live nonhuman primates or non-fixed lung or lymph nodes from nonhuman primates are reminded by letter (Attachment II) to return to OMS as follows:
 - 1. If the prior tuberculin skin test was negative, the test is repeated every six months.
 - 2. If the prior tuberculin skin test was positive, regardless of whether chemoprophylaxis or treatment was received, the employee will be sent an informational TB health review annually with a letter asking the worker to call OMS if he or she has any symptoms suggestive of active tuberculosis.
- C. Recall for retrovirus monitoring is described in the RESP.
- D. Upon successful completion of the recall visit, the employee is given a Medical Evaluation Form (Attachment I) documenting that he/she is participating in the AESP.

XII. XII. Requirements for certification of enrollment and continuing participation in the Animal Exposure Surveillance Program (AESP):

- A. Participants working with small animals
 - 1. Medical counseling (Section VII.A.2).
 - 2. Tetanus immunization (Section VII.A.5).
- B. Participants working with large animals
 - 1. Medical counseling (Section VII.A.2).
 - 2. Tetanus immunization (Section VII.A.5).
 - 3. Rabies immunization, if applicable (Section VIII.A).
 - 4. Serologic testing for toxoplasmosis, if applicable (Section VIII.B).
- C. Participants working with live nonhuman primates
 - 1. Medical counseling (Section VII.A.2).
 - 2. Tetanus immunization (Section VII.A.5).
 - 3. Tuberculosis screening (Section IX.A).
 - a. If the enrollee fails to keep the recommended AESP periodic visit, OMS mails a reminder (Attachment III). The memorandum is copied to the employee's supervisor and Animal Program Director.
 - b. If the employee does not schedule and keep a follow-up visit within two weeks of the reminder notice, the supervisor and Animal Program Director are notified of the employee's noncompliance by memorandum (Attachment IV). The memorandum is copied to the employee.

4. Rubeola immunization/protection (Section IX.B)
Participants who lack documented protection to rubeola and who refuse vaccination, and those who cannot receive the vaccine due to a medical contraindication, are identified to their supervisor and APD as lacking protection to rubeola.
5. Rabies immunization, if applicable (Section VIII.A).
- D. Participants working with nonfixed tissue from nonhuman primates
 1. Medical counseling (Section VII.A.2)
 2. Baseline tuberculosis screening (Section VII.A.3)

XIII. Surveillance Program Report

- A. A list of employees enrolled in the AESP is provided to the APDs for the ICs for their respective areas. The report is provided in the first week of October and April, and contains the following information for each participant:
 1. Name
 2. Last four digits of the social security number
 3. Category of animal used or cared for
 4. Date enrolled
 5. Recall date for NHP workers, and
 6. Compliant or non-compliant status.
- B. Each APD reviews the list with supervisors, makes appropriate corrections, and returns the corrected list to OMS.

Occupational Medical Service Animal Exposure Surveillance Program (AESP) Medical Evaluation	Date
Employee's Name	SSN (Last 4)
Supervisor's Name	ICD

Employee is reporting for

☐

Enrollment in the AESP

☐

Routine periodic visit

Animal category

☐

Small

☐

Large

☐

Nonhuman primate

☐

Primate non-fixed tissues

Medical Recommendations

☐

The above employee is cleared for contact with the designated animal(s).

☐

The above employee is not cleared for nonhuman primate contact.

Restrictions include: _____

☐

The above student is cleared for contact with the designated animal(s) through _____

☐Employees working with live nonhuman primates must return for medical evaluation in OMS at regular intervals. This employee must return to OMS in (*month/year*) _____*Note: It is the employee's/student's responsibility to provide this form to the supervisor.*

OMS Representative's Signature	Date
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DATE:

TO:

FROM: Staff Nurse
 Occupational Medical Service, DS

SUBJ: Periodic Medical Evaluation
 Animal Exposure Surveillance Program

Your Occupational Medical Service (OMS) record indicates that you are due for a routine periodic medical evaluation as part of your participation in the Animal Exposure Surveillance Program (AESP). Please call me at 496-9278 within two days to schedule an appointment.

If you work with nonhuman primates, a tuberculin skin test for tuberculosis (PPD) is required every six months. All participants should receive a tetanus booster every ten years. Your records indicate that you are due for a:

_____ Tuberculin Skin Test
_____ Tetanus Booster

Please bring this letter with you on the day of your appointment.

If you have any questions regarding this information, please contact me at the above number.

Staff Nurse
Bldg. 13, Room G904

DATE:

TO:

FROM: Staff Nurse
 Occupational Medical Service, DS

SUBJ: Periodic Medical Evaluation
 Animal Exposure Surveillance Program

Occupational Medical Service (OMS) records indicate that you did not respond to a prior request to return to the clinic for medical evaluation as part of your participation in the Animal Exposure Surveillance Program (AESP). Please call me at 496-9278 within two days to schedule an appointment within two weeks of the date of this memorandum.

Please be aware that OMS is required to notify your supervisor and the Animal Program Director for your IC if you do not keep recommended AESP related appointments. Noncompliance may result in administrative action by your supervisor.

Staff Nurse
Bldg. 13, Room G904

cc: Supervisor
 Animal Program Director

DATE:

TO: Supervisor
Animal Program Director

FROM: Staff Nurse
Occupational Medical Service, DS

SUBJ: Noncompliance with Periodic Medical Evaluation
Animal Exposure Surveillance Program

Occupational Medical Service (OMS) records indicate that _____
has not complied with two requests to return to OMS for standard, periodic, medical evaluation as
part of his/her participation in the Animal Exposure Surveillance Program (AESP). He/she is no
longer registered as a participant in the AESP.

Staff Nurse
Bldg. 13, Room G904

cc: Employee